

## Grades 6–8: Data Analysis and Probability

**STANDARD** I. Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.

**EXPECTATION** A. Formulate questions, design studies, and collect data about a characteristic shared by two populations or different characteristics within one population.

6	7	8
1. Given a problem situation involving one population, collect, analyze, and interpret data.	1. Given a problem situation involving two populations, collect, analyze, and interpret data.	

**EXPECTATION** B. Select, create, and use appropriate graphical representations of data, including histograms, box plots, and scatterplots.

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1. Organize and display data in a variety of ways including frequency tables, histograms, and stem-and-leaf plots.	1. Organize, display, and interpret data in a variety of ways including box-and-whisker plots. 2. Construct circle graphs and interpret the meaning.	1. Use a matrix to organize and describe data. 2. Create and use a scatterplot and estimate its line of fit. 3. Explain what type of graph would be appropriate for a given data set.

**STANDARD****II. Select and use appropriate statistical methods to analyze data.****EXPECTATION****A. Find, use, and interpret measures of center and spread, including mean and interquartile range.**

<b>6</b>	1. Create and solve problems involving the mean, median, mode, and range of a set of data.	1. Compute, describe, and interpret the interquartile range.	1. Determine which measure of center is the most appropriate for a given situation and explain the reasoning used.
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**EXPECTATION****B. Discuss and understand the correspondence between data sets and their graphical representations, especially histograms, stem-and-leaf plots, box plots, and scatterplots.**

<b>6</b>	1. Interpret histograms and stem-and-leaf plots.  *2. Describe the relationship between a data set and its corresponding histogram or stem-and-leaf plot.	*1. Describe the relationship between a data set and its corresponding box plot or circle graph.	1. Explain how different graphical representations of data can bias the interpretation of these data.
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**STANDARD****III. Develop and evaluate inferences and predictions that are based on data.****EXPECTATION****A. Use observations about differences between two or more samples to make conjectures about the populations from which the samples were taken.**

<b>6</b>	1. Analyze and list the differences between two data sets.	1. Make inferences and predictions based on the analysis of sample data.	8
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<b>EXPECTATION</b>	B.	Make conjectures about possible relationships between two characteristics of a sample on the basis of scatterplots of the data and approximate lines of fit.	
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\*1. Use a scatterplot and its line of fit to determine if a positive relationship, a negative relationship, or no relationship exists between two sets of data and then use them to make predictions.

<b>EXPECTATION</b>	C.	Use conjectures to formulate new questions and plan new studies to answer them.	
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1. Formulate a hypothesis and then design and carry out an experiment to test it.
2. Formulate new areas of investigation based on the results of prior experiments.

## **STANDARD** IV. Understand and apply basic concepts of probability.

<b>EXPECTATION</b>	A.	Understand and use appropriate terminology to describe complementary and mutually exclusive events.	
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1. Identify and describe complementary events.	1. Identify and describe mutually exclusive events.
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**EXPECTATION**

B. Use proportionality and a basic understanding of probability to make and test conjectures about the results of experiments and simulations.

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1. Create a sample space for one- or two-stage events and represent it in the form of a list, chart, picture, or tree diagram.  *2. From a given sample space, determine, and interpret the probability of an event.	1. Investigate and describe the difference between the probability of an event found through simulation and the theoretical probability of that same event.	1. Make inferences and convincing arguments based on analysis of theoretical or experimental probability.

**EXPECTATION**

C. Compute probabilities for simple compound events, using such methods as organized lists, tree diagrams, and area models.

6	7	8
1. Making a tree diagram or using models, determine the number of possible outcomes in two-stage events.	1. Using the fundamental counting principle or other techniques, determine the number of possible outcomes in a multistage event.  *2. Compute the probability of two independent events.	*1. Compute the probability of two dependent events.  2. Determine the odds of a given event.